

TRADEMARK

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

**Norio FUKASAWA et al**

PTO Confirmation No. **6285**

Serial Number: **09/029,608**

Group Art Unit: **2814**

Filed: **May 15, 1998**

Examiner: **Graybill, D.**

For: **METHOD AND MOLD FOR MANUFACTURING  
SEMICONDUCTOR DEVICE, SEMICONDUCTOR  
DEVICE AND METHOD FOR MOUNTING THE DEVICE**

**INFORMATION DISCLOSURE STATEMENT WITH STATEMENT  
PURSUANT TO 37 CFR 1.97(d)**

**Attn: Group Director**

**MAIL STOP AF**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

June 19, 2003

Sir:

The attention of the Patent and Trademark Office is hereby directed to the documents listed on the attached Form PTO-1449. One copy of each of these documents is attached.

This Information Disclosure Statement is submitted after the mailing of a final action, a Notice of Allowance, or an action that otherwise closes prosecution in the application, but on or before payment of the Issue Fee.

The undersigned hereby states that each item of information contained in this statement (if not already of record) was first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this statement.

06/20/2003 ZJUHAR1 00000047 09029608

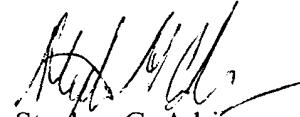
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The above information is presented so that the Patent and Trademark Office can, in the first instance, determine any materiality thereof to the claimed invention. See 37 CFR 1.104(a) concerning the PTO duty to consider and use any such information. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the documents cited in the attached Form PTO-1449 be made of record therein and appear on the first page of any patent to issue therefrom.

A check is attached hereto which covers the \$ 180.00 fee set forth in 37 CFR § 1.17(p). The Commissioner is hereby authorized to charge any additional fee (or credit any overpayment) associated with this Statement to our Deposit Account No. 01-2340.

Respectfully submitted,

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**23850**

PATENT TRADEMARK OFFICE

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Enclosures: 2 European Search Reports  
PTO 1449 w/11 refs.  
\$180.00 fee



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Europäisches  
Patentamt

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Search  
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Office européen  
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GRANDE BRETAGNE

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ACKNOWLEDGEMENT	
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2 - JUN 2003	
Datum/Date	
03.06.03	

Zeichen/Ref./Ref. HL59517/012/WS	Anmeldung Nr./Application No./Demande n°./Patent Nr./Patent No./Brevet n°. 02016816.7-2203-
Anmelder/Applicant/Demandeur/Patentinhaber/Proprietor/Titulaire FUJITSU LIMITED	

## COMMUNICATION

The European Patent Office herewith transmits as an enclosure the European search report for the above-mentioned European patent application.

If applicable, copies of the documents cited in the European search report are attached.

Additional set(s) of copies of the documents cited in the European search report is (are) enclosed as well.

The following specifications given by the applicant have been approved by the Search Division:

abstract

title

The abstract was modified by the Search Division and the definitive text is attached to this communication.

The following figure will be published together with the abstract:

3



## REFUND OF THE SEARCH FEE

If applicable under Article 10 Rules relating to fees, a separate communication from the Receiving Section on the refund of the search fee will be sent later.



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	WO 96 01495 A (FICO BV ;GIESEN HENRICUS BERNARDUS ANTO (NL)) 18 January 1996 (1996-01-18) * See complete document * ---	1-5	H01L21/56 H01L21/60 H01L23/28 B29C43/18
A	PATENT ABSTRACTS OF JAPAN vol. 009, no. 099 (E-311), 27 April 1985 (1985-04-27) & JP 59 225534 A (MITSUBISHI DENKI KK), 18 December 1984 (1984-12-18) * abstract * ---	1-5	
A	PATENT ABSTRACTS OF JAPAN vol. 1996, no. 07, 31 July 1996 (1996-07-31) & JP 08 072092 A (MITSUBISHI PLASTICS IND LTD), 19 March 1996 (1996-03-19) * abstract * ---	1-5	
A	US 4 741 787 A (NARISAWA SABURO ET AL) 3 May 1988 (1988-05-03) * claims 1-9; figure 1 * ---	1	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
A	PATENT ABSTRACTS OF JAPAN vol. 1995, no. 02, 31 March 1995 (1995-03-31) & JP 06 318609 A (TOSHIBA CORP), 15 November 1994 (1994-11-15) * abstract * -----	1	H01L B29C
The present search report has been drawn up for all claims			
1	Place of search MUNICH	Date of completion of the search 22 May 2003	Examiner Cousins, D
CATEGORY OF CITED DOCUMENTS			
<p>X : particularly relevant if taken alone      Y : particularly relevant if combined with another document of the same category      A : technological background      C : prior written disclosure      D : intermediate document</p> <p>T : theory or principle underlying the invention      E : earlier patent document, but published on, or after the filing date      D : document cited in the application      L : document cited for other reasons      &amp; : member of the same patent family, corresponding document</p>			

ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.

EP 02 01 6816

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

22-05-2003

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
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			EP	0212994 A2	04-03-1987	
JP 06318609	A	15-11-1994	NONE			



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ACKNOWLEDGEMENT	
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03.06.03	

COPY

Zeichen/Ref./Réf. HL59517/004/WS	Anmeldung Nr./Application No./Demande n°/Patent Nr./Patent No./Brevet n°. 01126199.7
Anmelder/Applicant/Demandeur/Patentinhaber/Proprietor/Titulaire FUJITSU LIMITED	

## COMMUNICATION

The European Patent Office herewith transmits

- the European search report
- the declaration under Rule 45 EPC
- the partial European search report under Rule 45 EPC
- the supplementary European search report concerning the international application under Article 157(2) EPC relating to the above-mentioned European patent application. Copies of the documents cited in the search report are enclosed.

The following specifications given by the applicant have been approved by the Search Division :

Abstract

Title

Figure

- The abstract was modified by the Search Division and the definitive text is attached to this communication.
- The following figure will be published with the abstract, since the Search Division considers that it better characterises the invention than the one indicated by the applicant.

Figure:

- Additional copy(copies) of the documents cited in the European search report.



## REFUND OF THE SEARCH FEE

According to Article 10(2) of the Rules relating to fees, a separate communication with the Patent Office on the refund of the search fee will be sent later.



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	PATENT ABSTRACTS OF JAPAN vol. 017, no. 257 (E-1368), 20 May 1993 (1993-05-20) -& JP 05 003183 A (NEC CORP), 8 January 1993 (1993-01-08) * abstract * ---	1,2, 11-17	H01L21/56 H01L21/60 H01L23/28 B29C43/18 H01L23/485 H01L23/31 H01L21/78
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X	PATENT ABSTRACTS OF JAPAN vol. 095, no. 003, 28 April 1995 (1995-04-28) -& JP 06 342794 A (MITSUBISHI ELECTRIC CORP), 13 December 1994 (1994-12-13) * abstract *	1,2, 10-17	
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X	PATENT ABSTRACTS OF JAPAN vol. 016, no. 130 (E-1184), 2 April 1992 (1992-04-02) -& JP 03 293740 A (CASIO COMPUT CO LTD), 25 December 1991 (1991-12-25) * abstract *	1,2, 11-17	
Y		3-9	
A	US 4 172 907 A (KEEFE JAMES E O ET AL) 30 October 1979 (1979-10-30) * column 4, line 10 - column 6, line 13 *	1,2	
A	PATENT ABSTRACTS OF JAPAN vol. 017, no. 356 (E-1394), 6 July 1993 (1993-07-06) -& JP 05 055278 A (SONY CORP), 5 March 1993 (1993-03-05) * abstract *	1,2, 11-17	
		-/-	
The present search report has been drawn up for all claims			

2

Place of search	Date of completion of the search	Examiner
MUNICH	22 May 2003	Cousins, D

CATEGORY OF CITED DOCUMENTS

- X particularly relevant taken alone
- Y particularly relevant if combined with another document of the same category
- A technological background
- C non-written disclosure
- P intermediate document

- 1. theory or principle underlying the invention
- 2. earlier patent document, but published or filed after the filing date
- 3. document cited in the application
- 4. document cited for other reasons
- 5. member of the same patent family, corresponding document



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	PATENT ABSTRACTS OF JAPAN vol. 018, no. 461 (E-1597), 26 August 1994 (1994-08-26) -& JP 06 151487 A (MITSUBISHI ELECTRIC CORP), 31 May 1994 (1994-05-31) * abstract * ---	1,2,10, 13-17	
✓ Y	US 5 431 328 A (CHANG SHYH-MING ET AL) 11 July 1995 (1995-07-11) * column 3, line 18 - column 3, line 46; figures 1,2 *	3-7	
✓ Y	EP 0 689 240 A (IND TECH RES INST) 27 December 1995 (1995-12-27) * claims 1-4; figure 1 *	3-7	
✓ Y	EP 0 295 914 A (HEWLETT PACKARD CO) 21 December 1988 (1988-12-21) * Abstract; figures 1-3 *	3-7	
✓ Y	US 5 266 528 A (YAMADA YUTAKA) 30 November 1993 (1993-11-30) * column 2, line 46 - column 2, line 58; figure 1 *	8	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
✓ Y	PATENT ABSTRACTS OF JAPAN vol. 003, no. 067 (E-116), 9 June 1979 (1979-06-09) -& JP 54 045570 A (MATSUSHITA ELECTRIC IND CO LTD), 10 April 1979 (1979-04-10) * abstract *	8	
✓ Y	US 5 408 320 A (ITOU MASAAKI ET AL) 18 April 1995 (1995-04-18) * column 16, line 31 - column 16, line 42; figure 21 *	9	
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-/-			
The present search report has been drawn up for all claims			
2	Place of search	Date of completion of the search	Examiner
	MUNICH	22 May 2003	Cousins, D

CATEGORY OF CITED DOCUMENTS

- X particularly relevant taken alone
- Y particularly relevant taken together with another document of the same category
- A technological background
- D non-written disclosure
- P intermediate document

- E theory or principle underlying the invention
- F earlier patent document, but published on or after the filing date
- G document cited in the application
- H document cited for other reasons
- I computer program or program product
- J member of the same patent family - corresponding document



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	US 4 741 787 A (NARISAWA SABURO ET AL) 3 May 1988 (1988-05-03) * claims 1-9; figure 1 * -----	13,16	
X	PATENT ABSTRACTS OF JAPAN vol. 1995, no. 02, 31 March 1995 (1995-03-31) -& JP 06 318609 A (TOSHIBA CORP), 15 November 1994 (1994-11-15) * abstract * -----	13,16	
TECHNICAL FIELDS SEARCHED (Int.Cl.6)			
The present search report has been drawn up for all claims			
2	Place of search	Date of completion of the search	Examiner
EP 01 12 6199 (ICON)	MUNICH	22 May 2003	Cousins, D
CATEGORY OF CITED DOCUMENTS			
<input checked="" type="checkbox"/>	particularly relevant if taken alone	1 theory or principle underlying the invention	
<input checked="" type="checkbox"/>	particularly relevant if combined with another document of the same category	2 earlier patent document, but published on, or after the filing date	
<input type="checkbox"/>	A technological background	3 document cited in the application	
<input type="checkbox"/>	B non-written disclosure	4 document cited for other reasons	
<input type="checkbox"/>	C intermediate document	5 member of the same patent family, corresponding document	



### CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
  
- No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

### LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
  
- None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1, 2, 18, 19

Claims 1, 2, 18 and 19 relate to a semiconductor device comprising a semiconductor element having having (optionally convex - claim 2) protruding electrodes, a resin seal, and (further) external connection protruding electrodes on said protruding electrodes.

2. Claims: 3 - 7

Claims 3 - 7 relate to a semiconductor element comprising a semiconductor element having protruding electrodes, a resin seal, and said protruding electrodes having a core portion and an electrically conductive film thereon.

3. Claim : 8

Claim 8 relates to a semiconductor element comprising a semiconductor element having protruding electrodes, a resin seal, and the semiconductor element having an outer peripheral portion thinner than a central portion.

4. Claim : 9

Claim 9 relates to a semiconductor element comprising a semiconductor element having protruding electrodes, a resin seal, and the semiconductor element having an outer peripheral portion thicker than a central portion.

5. Claim : 10

Claim 10 relates to a semiconductor element comprising a semiconductor element having protruding electrodes, a resin seal, and part of the side portion of the semiconductor element being covered with the resin layer.

6. Claims: 11, 12

Claims 11 and 12 relate to a semiconductor element comprising a semiconductor element having protruding electrodes, a resin seal, and the semiconductor element having a protrusion for positioning formed thereon.

7. Claims: 13 - 17

ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.

EP 01 12 6199

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on [www.eipa.be](http://www.eipa.be). The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

22-05-2003

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
JP 05003183	A	08-01-1993	JP	2701589 B2	21-01-1998
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			EP	0212994 A2	04-03-1987
JP 06318609	A	15-11-1994	NONE		

<b>INFORMATION DISCLOSURE CITATION PTO-1449</b>	Atty. Docket No. 980233	Serial No. 09/029,608
	Applicant(s): FUKASAWA et al.	
	Filing Date: May 15, 1998	Group Art Unit: 2814

#### U.S. PATENT DOCUMENTS

Examiner Initial		Document No.	Name	Date	Class	Subclass	Filing Date (If appropriate)
_____	AA	5,431,328	Chang et al.	7-11-95			5-6-94
_____	AB	5,266,528	Yamada	11-30-93			9-9-92
_____	AC	5,408,320	Katagiri et al.	4-18-95			12-22-92
_____	Ad	4,741,787	Shimizu et al.	5-3-88			2-27-86

#### FOREIGN PATENT DOCUMENTS

		Document No.	Date	Country	Translation (Yes or No)
_____	AE	0 689 240 A1	12-27-95	Europe	NA
_____	AF	0 295 914 A2	12-21-88	Europe	NA
_____	AG	54-45570	4-10-79	Japan	Yes-Abstract
_____	AH	6-318609	11-15-94	Japan	Yes-Abstract
_____	AI	WO 96/01495	1-18-96	PCT	NA
_____	AJ	59-225534	12-18-84	Japan	Yes-Abstract
_____	AK	8-72092	3-19-96	Japan	Yes-Abstract

#### OTHER DOCUMENTS

_____	AK		RECEIVED JUN 23 2003 TECHNOLOGY CENTER 2800
_____	AL		
Examiner		Date Considered	